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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,701	01/14/2004	Robert M. Fuerst	A1-051 CON1 US	4471
23683	7590	10/05/2005	EXAMINER	
MOLEX INCORPORATED 2222 WELLINGTON COURT LISLE, IL 60532			NGUYEN, PHUONGCHI T	
			ART UNIT	PAPER NUMBER
			2833	

DATE MAILED: 10/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

10/757,701

Applicant(s)

FUERST ET AL.

Examiner

Phuongchi Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 25-41 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 32-38 and 41-43 is/are allowed.
- 6) ☒ Claim(s) 25-31 is/are rejected.
- 7) ☒ Claim(s) 39 and 40 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: Attachment 2

DETAILED ACTION

1. Applicant's amendment of July 27, 2005 is acknowledged. It is noted that claims 1-24 are canceled. The specification and claims 25, 36 and 41 are amended. New claims 42-43 are added.

- Terminal disclaimer of July 27, 2005 has been approved.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 25 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Johnson et al (US5297968).

In regard to claim 25, Johnson et al further discloses (attachment 2) a connector assembly comprising a male connector (A) including a relatively rigid male body member (11) having an edge (B) about which the flexible circuit (16) is wrapped with the first conductors (on 16) of the circuit (16) facing away from the body member (11) at the edge (B) thereof; and an adapter (C) including a first receptacle (D) for receiving the male connector (A) inserted edge-first into the first receptacle (D), and a second receptacle (E) for removably receiving the second conductors (21) in position for engaging the first conductors of the flexible circuit (16) at the edge (B) of the male body member (11);

the male body member (11) having a thickness dimension (T1) defined by a maximum separation distance between portions of the flat flexible circuit (16) extending along opposing sides of the male body member (11) when the flexible circuit (16) is wrapped about the edge (B), the male body member (11) also having a dimension (T2) extending along a direction of insertion of the edge (B) into the first receptacle (D), the dimension (T2) extending along the

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direction of insertion being substantially greater than the thickness dimension (T1) for resisting deflection of the edge (B) in a direction opposite the direction of insertion during engagement between the first conductors (16) and the second conductors (21).

In regard to claim 30, Johnson et al discloses a second flat flexible circuit (21) (column 3, line 66) inserted into the first opening (F) of the second receptacle (E) of the adapter (C), the second flexible circuit (21) having the second conductors (on 21) engageable with the first conductors (on 16) (attachment 2).

Claim Rejections - 35 USC § 103

4 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson et al (US5297968) in view of Perino et al (US6234820B1).

In regard to claim 26, Johnson et al lacks a relatively yieldable backing structure. However, Perino teaches the connector assembly including a relatively yieldable backing structure (370) on the male body member (150, 310) at the edge thereof beneath the flexible circuit (365) for resiliently biasing the first conductors of the circuit (365) (figure 3). It would have been obvious to one having ordinary skill at the time the invention was made to modify the connector assembly of Johnson by having a relatively yieldable backing structure as taught by Perino for having flexibility to the first conductor of the flexible circuit onto the adapter.

In regard to claim 27, Johnson et al lacks a longitudinal resilient strip. However, Perino teaches the body member (150) is elongated and the yieldable backing structure (370) comprises a longitudinal resilient strip along the edge (figure 3). It would have been obvious to one having

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ordinary skill at the time the invention was made to modify the connector assembly of Johnson by having a longitudinal resilient strip as taught by Perino for increasing contact areas between the flexible circuit and the male connector body and adapter.

In regard to claim 28, Johnson et al lacks a position means. However, Perino teaches positioning means (345) on the male body member (150) for locating the flexible circuit wrapped about the edge of the body member (150) (figure 3). It would have been obvious to one having ordinary skill at the time the invention was made to modify the connector assembly of Johnson by having a positioning means as taught by Perino in order to fixedly hold the flexibly circuit onto the male body member.

In regard to claim 29, it would have been obvious to one having ordinary skill at the time the invention was made to modify the connector assembly of Johnson by having an adhesive as taught by Perino for having a good connection between the flexible circuit and the male body member.

6. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson et al (US5297968) in view of Kamono et al (US4973264).

In regard to claim 31, Johnson et al lacks a plurality of discrete electrical wires. However, Kamono teaches a plurality of discrete electrical wires (50) having second conductors (30) (figures 2-4). It would have been obvious to one having ordinary skill at the time the invention was made to modify the connector assembly of Johnson by having a plurality of discrete electrical wires as taught by Kamono to engage with the first conductor of the flexible conductor for having a different connection when the user needed.

Allowable Subject Matter

7. Claims 32-38 and 41-43 are allowed.

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8. Claim 39-40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter:

In regards to claims 32 and 39, the prior art fails to teach or suggest a connector assembly for interconnecting first conductors of a flat flexible circuit to a plurality of second conductors comprising an edge of a relatively rigid male body member about which the flexible circuit is wrapped having a length dimension, a dimension of the male body member extending along a direction of insertion of the edge into the receptacle, and extending along the direction of insertion being at least equal of the edge length dimension.

In regards to claim 42, the prior art fails to teach or suggest a connector assembly for interconnecting first conductors of a flat flexible circuit to a plurality of second conductors comprising a receptacle of a female connecting device for receiving the male connector inserted into the receptacle, and an opening of a female connecting device communicating the receptacle with an outside of the device and remaining open after assembly for removably positioning the second conductors from exteriorly of the device in engagement with the first conductors of the flexible circuit at the edge of the male body member.

Responses to Arguments

10. In regards to claim 25, Applicant argues that "T1" is not the thickness of the male member but an arbitrary positioning." is not deemed persuasive. "T1" is defined based on the recitation of claim 1; which is "the male body member 11 having a **thickness dimension T1** defined by a maximum separation distance between portions (portion 1 and portion 2)(attachment 2) of the flat flexible circuit 16 extending along opposition sides of the male body member 11" (claim 1, paragraph 4th, lines 1-3) as shown in the attachment 1.

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Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuongchi Nguyen whose telephone number is (571) 272-2012. The examiner can normally be reached on 8:00AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paula Bradley can be reached on (571) 272-2800 ext 33. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free)

PCN September 30, 2005


P. AUSTIN BRADLEY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

For 10/57, 701

Attachment 2



US005297968A

United States Patent [19]
Johnson et al.

[11] Patent Number: 5,297,968
[45] Date of Patent: Mar. 29, 1994

[54] **PLUGGABLE CONNECTOR SYSTEMS FOR FLEXIBLE ETCHED CIRCUITS**

4,940,426 7/1990 Redmond et al. 439/493
5,161,981 11/1992 Deak et al. 439/66

[75] Inventors: David C. Johnson, Winston Salem;
Keith L. Volz, Jamestown; Warren A. Bates, Winston Salem; Frederick R. Deak, Kernersville; Robert M. Renn, Pfafftown, all of N.C.

Primary Examiner—Gary F. Paumen
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[73] Assignee: The Whitaker Corporation, Wilmington, Del.

[57] ABSTRACT

[21] Appl. No.: 3,161

A pluggable connector system (10) has a male housing (11, 11', 11'', 11''') snapped together with a female housing (12, 12', 12'', 12''') thereby providing a quick-disconnect feature. One of the housings, or both, carries a flexible etched circuit (16). The flexible etched circuit (16) may engage another flexible etched circuit (16) or, via a suitable interface, may engage a printed circuit board (17) having at least one circuit pad (19) thereon. One embodiment of a suitable interface is a flexible electrical connector (21) having a plurality of circuit traces on an elastomeric core. In another embodiment, the flexible etched circuit (16) is backed up by resilient means (33, 35) and engages the circuit pad (19) directly. The means for releasably retaining the housings (11, 11', 11'', 11''' and 12, 12', 12'', 12''') comprises a pair of spring-loaded manually-releasable latches (24, 24', 25) or a pair of bifurcated latching ears (43, 44).

[22] Filed: Jan. 12, 1993

[51] Int. Cl.⁵ H01R 9/09

[52] U.S. Cl. 439/67; 439/91;

[58] Field of Search 439/67, 329, 493, 496,
439/498, 499, 66, 91

[56] References Cited

U.S. PATENT DOCUMENTS

3,154,365 10/1964 Crimmins 439/67
3,486,159 12/1969 Matthews 439/496
3,753,207 8/1973 Maheux et al. 439/496
4,824,384 4/1989 Nicholas et al. 439/496

12 Claims, 16 Drawing Sheets

